UniGuard

Risk management and Insurance mechanisms for Uniswap hooks

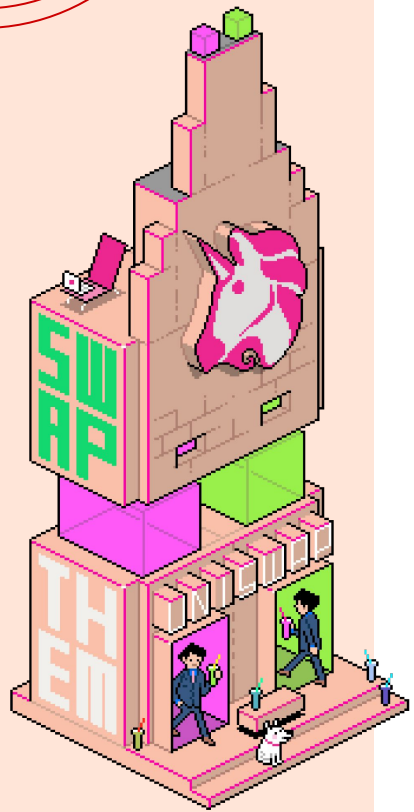
About

An insurance system for Uniswap V4 hooks that combines UNI staking governance, AVS-powered monitoring, and zero-knowledge proofs for victim compensation by Brevis.

Motivation

- Support hook innovation while protecting users
- Create decentralized security validation through UNI staking
- Ensure fair and verifiable compensation for affected users

Triple-Layer Protection System



UNI Staking

Decentralized risk assessment through UNI token staking provides economic security and community governance

AVS Monitoring

Autonomous monitoring system continuously evaluates hook behavior for real-time risk detection

Brevis ZK Proof

Zero-knowledge proof system ensures secure and verifiable victim compensation claims

A comprehensive security framework for Uniswap V4 hooks

Hook Registration Process

Securing Your Hook with Insurance Protection

1. Submit Hook

Developer deploys hook and registers with HookRegistry

Example: LimitOrder.sol

2. Insurance Deposit

Provide USDC deposit to InsuranceVault

Minimum: 10,000 USDC

3. UNI Staking

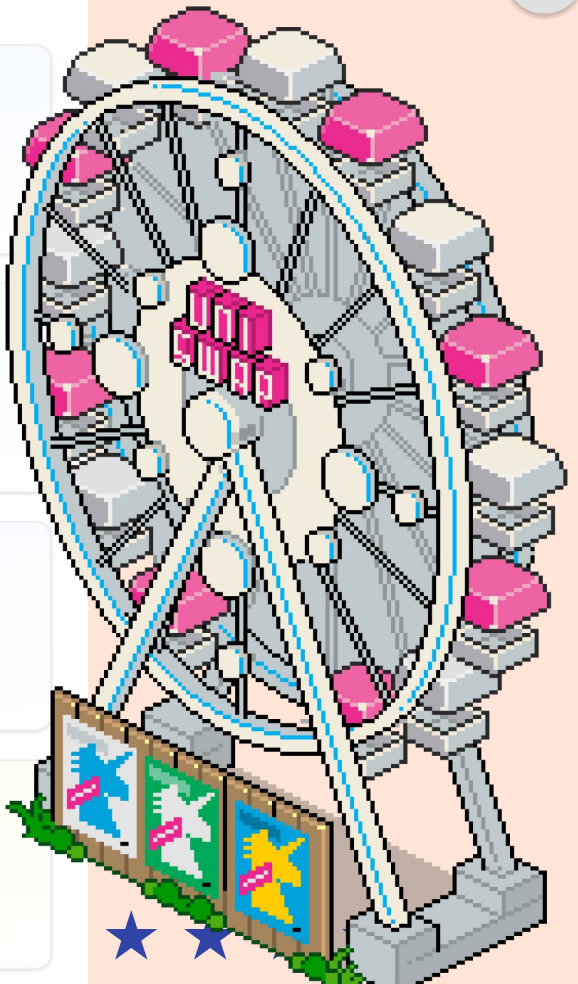
Community stakes UNI tokens to validate hook

Minimum per staker: 1,000 UNI

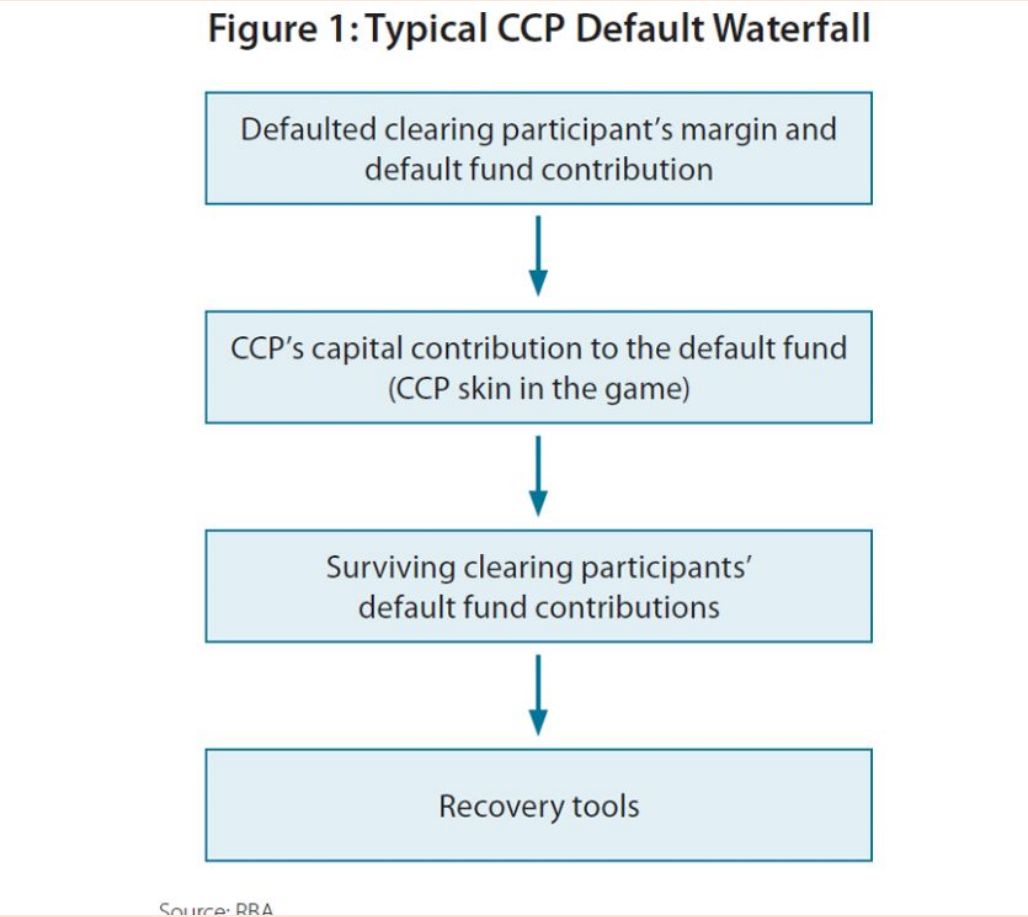
4. Hook Activation

Hook becomes active with full protection

Monitored by AVS + Community



How should we design optimal resolution processes?



In my previous role, I was involved in designing liquidation processes for securities companies in Clearing Corporaion

Want to implement similar resolution mechanisms in the crypto space.

Protection System in Action

Example: Protecting Users from a Compromised Hook

1. Incident Detection

AVS detects suspicious activity in LimitOrder hook:
- Unusual order manipulation detected
- Risk score increases to 80/100

2. Automatic Protection

System responds immediately:
- Hook is automatically paused
- Further interactions blocked

3. Governance Response

UNI stakers take action:
- Insolvency proposal created
- Community votes to process compensation

4. Victim Verification

Brevis processes claims:
- Users submit proof of loss
- ZK proofs verify legitimate claims

5. Compensation

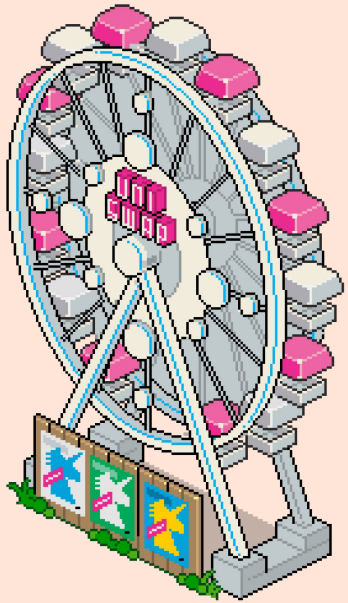
Verified victims receive compensation:
- USDC from insurance pool distributed
- Individual claims processed securely

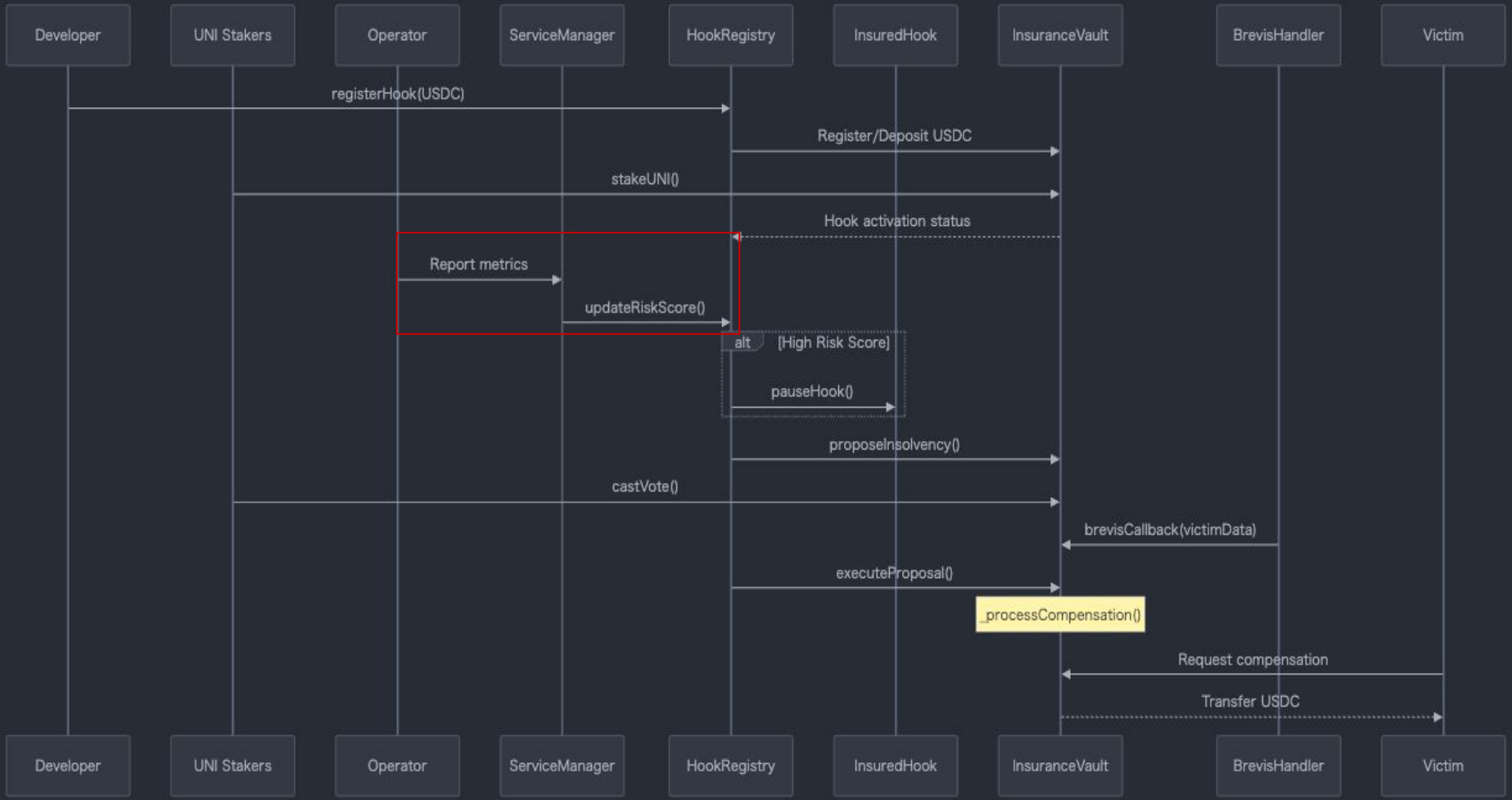
Demo

Key scenarios we'll demonstrate:

- Risk monitoring with AVS

- Complete hook lifecycle testing
  1. Regist Hook
  2. Uni token stake
  3. Victim compensation flow
     with Uni governance and Brevis integration

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Operator
ServiceManager
HookRegistry
InsuredHook
InsuranceVault
BrevisHandler
Victim
registerHook(USDC)
Register/Deposit USDC
stakeUNI()
Hook activation status
Report metrics
updateRiskScore()
alt
[High Risk Score]
pauseHook()
proposeInsolvency()
castVote()
brevisCallback(victimData)
executeProposal()
_processCompensation()
Request compensation
Transfer USDC
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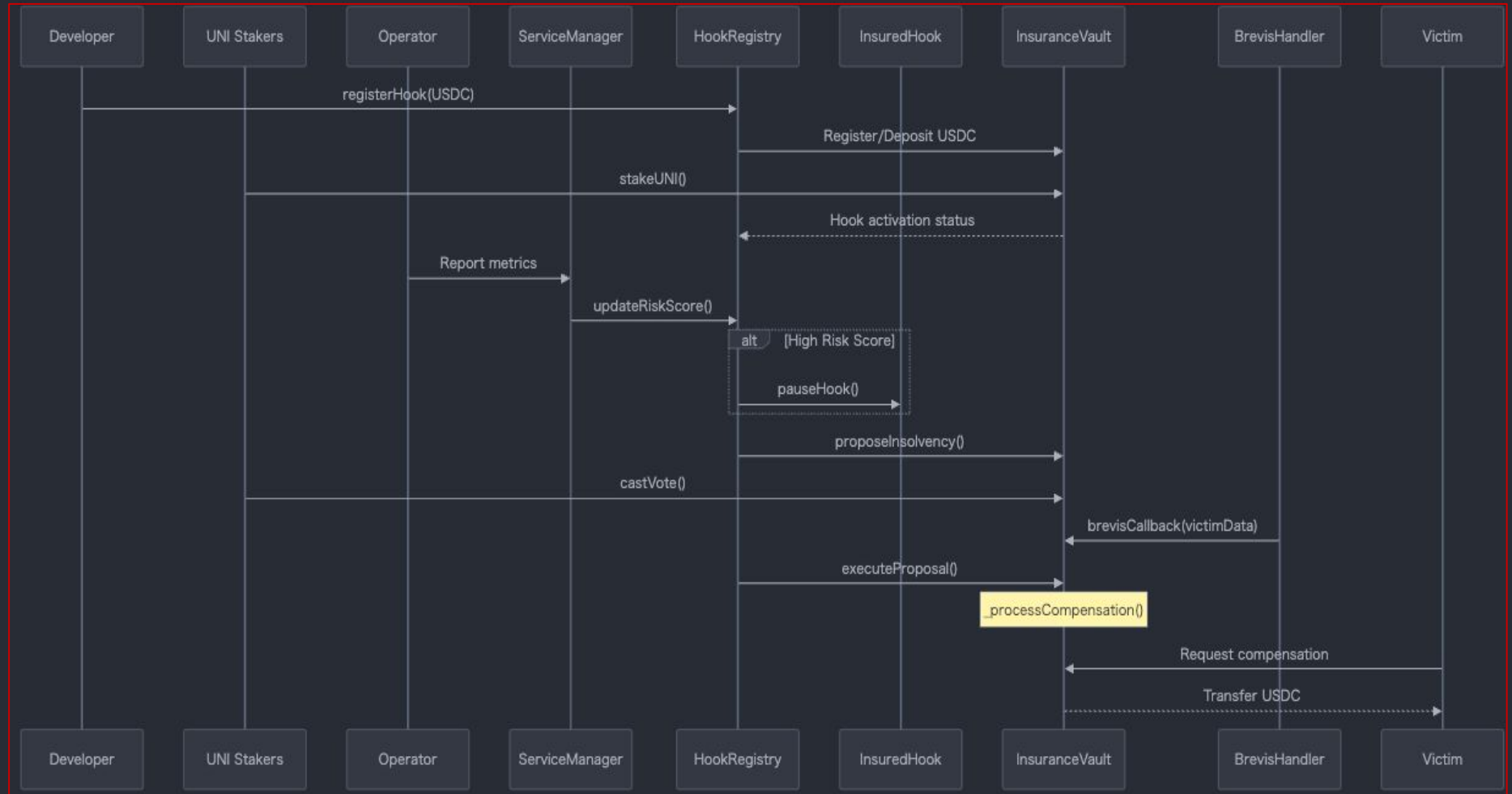
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UniGuard is Secure Foundation for Hook Innovation

Combining UNI governance, AVS monitoring, and Brevis ZK proofs

=>Community-driven security validation

This is Uni (:=Uni holder + AVS + Brevis)
Guard